REMARKS

The Examiner has rejected Claims 1-3, 6, 8, 9, 16, and 17 under 35 U.S.C. 103(a) as being unpatentable over Aleksic et al. (U.S. Patent No. 6,175,368), in view of Cosman (U.S. Patent No. 6,525,740). Applicant respectfully points out that the Examiner has rejected claims 1-3, 5-6, 8, 16, and 17 under 35 U.S.C. 103(a) (on page 3 of the Office Action mailed 9/20/2007) and has rejected 1-3, 6, 8, 9, 16, and 17 under 35 U.S.C. 102(e) (on page 4 of the Office Action mailed 09/20/2007), but relies on both the Aleksic and Cosman references in the rejection. As a result, applicant interprets the Examiner's arguments as constituting the 35 U.S.C. 103(a) rejection. Applicant respectfully disagrees with such rejection.

With respect to independent Claims 1, 16, and 17, the Examiner has relied on Col. 3, lines 4-6 from Aleksic, in addition to Col. 1, lines 55-57 and Col. 6, lines 15-50 from Cosman to make a prior art showing of applicant's claimed technique "wherein the modifying is based on a depth-component of the algorithm."

Specifically, the Examiner has argued that "Aleksic teaches modifying is based on the normal shading component." In addition, the Examiner has argued that "Cosman teaches [calculating] angular tilts U and V from the values in [a] height map and stored in bump angle memory," that "the angular tilt of the bump map is considered...equivalent to the normal vector as both the angular tilt and the normal vector represents the curvature of the bump map," and that "[the] height map is the functional equivalent of a depth map." The Examiner has further argued that "therefore, Cosman teaches [deriving] the normal vector from the depth map (depth component)," that "Aleksic already teaches that modifying is based on the normal vector," and that "[the] values of [the] height map correspon[d] to the depth value."

Applicant respectfully disagrees and notes that the above excerpts relied on by the Examiner merely teach that "[t]he bump-shading component ($\Delta N \cdot L$) is then combined with the normal shading component ($N \cdot L$) to produce the shading function for the given

pixel" (Aleksic, Col. 3, lines 4-6). The excerpts further teach that '[t]o create the illusion of bumps, a bump texture map contains values for each texel, that define the local "tip" or "tilt" which is applied to the instantaneous surface normal' (Cosman, Col, 1, lines 55-57).

Additionally, the excerpts teach that "the bump curvature values are related to the largest absolute difference in the tilt values of the surrounding texels which in turn is related to the absolute height values of the bump map," and that "the angular tilts U and V are calculated by the angle processor 42 from the values in the height map 40 and stored in bump angle memory 44" (Cosman, Col, 6, lines 23-38).

Thus, as noted above, Aleksic only discloses that the bump-shading component ($\Delta N \cdot L$) is combined with the normal shading component ($N \cdot L$), which does not suggest that the normal shading component of Aleksic is the same as the angular tilts of Cosman, as suggested by the Examiner. Thus, merely disclosing that angular tilts are calculated by the angle processor from the values in the height map, in addition to disclosing that a bump-shading component is combined with a normal shading component to produce a shading function for a given pixel, fails to teach a technique "wherein the modifying is based on a depth-component of the algorithm" (emphasis added), as claimed.

Additionally, with respect to independent Claim 5, the Examiner has relied on Col. 3, lines 4-6 from Aleksic, in addition to Col. 1, lines 55-57 and Col. 6, lines 15-67, Col. 9, lines 6-15 and 35-67, and Col. 10, lines 1-54 from Cosman to make a prior art showing of applicant's claimed technique "wherein the modifying allows a lighting operation to display an interaction of displayed objects."

Specifically, the Examiner has reiterated the above noted arguments in addition to arguing that the "wave bump map and ocean correspon[d] to displayed objects," and that "raising the brightness of the scene to overall average brightness to compensate for the brightness decrease in areas near the specular highlight corresponds to applying a lighting operation."

Applicant respectfully disagrees. As noted above, Col. 3, lines 4-6 in Aleksic, in addition to Col. 1, lines 55-57 and Col. 6, lines 15-67 in Cosman, merely disclose that angular tilts are calculated by the angle processor from the values in the height map, and that a bump-shading component is combined with a normal shading component to produce a shading function for a given pixel. Clearly, such excerpts do not even suggest that "the modifying allows a lighting operation to display an interaction of displayed objects" (emphasis added), as claimed.

Additionally, the above excerpts relied on by the Examiner merely teach that "[t]o compensate for the brightness decrease in areas near the specular highlight a complementary computation is needed to raise the brightness of the scene to an overall average brightness that is believable" (Cosman, Col. 9, lines 12-15). Further, the excerpts teach "a wave bump map on a simulated ocean" and that "[w]here the bumps exist, the modeler can tune the coefficients so that the average brightness of the ocean within the specular area is correct" (Col. 9, lines 53-56).

However, merely disclosing that a complementary computation is needed to raise the brightness of a scene to an overall average brightness, in addition to disclosing a wave bump map and tuning coefficients where the bumps exist, fails to even *suggest* a technique "wherein the modifying allows a lighting operation to display an interaction of displayed objects" (emphasis added), as claimed by applicant.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*,947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir.1991).

Applicant respectfully asserts that at least the third element of the *prima facie* case of obviousness has not been met, since the prior art references, as relied upon by the Examiner, fail to teach or suggest all of the claim limitations, as noted above. A notice of allowance or a proper prior art showing of all of applicant's claim limitations, in combination with the remaining claim elements, is respectfully requested.

Applicant further notes that the prior art is also deficient with respect to the dependent claims. With respect to Claims 14 and 15, the Examiner has rejected the same under 35 U.S.C. 103(a) as being unpatentable over Aleksic, in view of Cosman, in view of Demers et al. (U.S. Patent No. 6,700,586), and further in view of Jenkins (U.S. Patent No. 6,028,608). Specifically, the Examiner has relied on Col. 53, lines 56-67; and Col. 54, line 38 from the Jenkins reference to make a prior art showing of applicant's claimed techniques "wherein y equals three (3)" (see Claim 14) and "wherein y equals four (4)" (see Claim 15). Further, the Examiner has argued that "Jenkins teaches a case when [the] viewpoint motion vector is parallel to [the] view direction vector, object space x and y values are constant while [the] z value varies.

Applicant respectfully disagrees and notes that the above excerpts relied on by the Examiner merely teach a "case of viewpoint motion with a constant view direction vector" (Col. 53, lines 56-57) and a "transform of x and y object-space values" (Col. 54, lines 37-38). However, nowhere in the cited excerpts is a technique taught "wherein y equals three (3)" (see Claim 14) and "wherein y equals four (4)" (see Claim 15), especially where "X includes $(n \bullet \mathbf{T}_{proj}[y])$" and "where $\mathbf{T}_{proj}[y]$ includes the projection transform" (see Claim 13), in the context claimed.

Additionally, applicant respectfully points out that the Examiner has failed to provide a specific prior art rejection of dependent Claim 9. Thus, a notice of allowance or a proper prior art showing of all of applicant's claim limitations, in combination with the remaining claim elements, is respectfully requested.

Again, since at least the third element of the *prima facie* case of obviousness has not been met, a notice of allowance or specific prior art showing of each of the foregoing claim elements, in combination with the remaining claimed features, is respectfully requested.

Still yet, applicant brings to the Examiner's attention the subject matter of new Claims 18-19 below, which are added for full consideration:

"wherein the clip-space z-value is extracted using a projection transform" (see Claim 18); and

"wherein the clip-space w-value is extracted using a projection transform" (see Claim 19).

Again, a notice of allowance or a proper prior art showing of all of applicant's claim limitations, in combination with the remaining claim elements, is respectfully requested.

Thus, all of the independent claims are deemed allowable. Moreover, the remaining dependent claims are further deemed allowable, in view of their dependence on such independent claims.

In the event a telephone conversation would expedite the prosecution of this application, the Examiner may reach the undersigned at (408) 505-5100. The

Commissioner is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 50-1351 (Order No. NVIDP015A).

Respectfully submitted,
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